

Applicant: William S. Gatley

Serial No. 09/597,448

11. (Amended)The furnace blower assembly of claim 7 wherein the apertures formed in the back plate of the impeller allow the cooling air to pass through the back plate.

12. (Amended)The furnace blower assembly of claim 7 wherein the impeller housing includes an outlet pipe such that rotation of the impeller expels the exhaust gases and the cooling air from the impeller housing through the outlet pipe.

REMARKS

Initially, the applicant would like to acknowledge the Examiner's cooperation during a telephone interview conducted on August 21, 2002. During this telephone interview, changes to the patent drawings, proposed claim amendments and amendments to the specification were discussed with respect to the rejections made by the Examiner in the Office Action of April 23, 2002. Additionally, the Gatley U.S. Patent No. 6,231,311 was discussed and whether this patent is a proper prior art reference based on the priority date of the present application.

In the Office Action, the Examiner objected to the proposed drawings that were filed on January 11, 2002. The Examiner objected to these drawings as including new subject matter. By the present amendment, the applicant has revised the drawings to bring them into more close conformance with the drawings originally filed with the application. The drawings now include Figs. 1-3, which closely correspond to the originally filed Figs. 1-3. Therefore, the applicant is believed to have addressed the new matter rejection made by the Examiner with respect to the proposed drawings filed on January 11, 2002.

In the rejection of the drawings, the Examiner also objected to the fact that the drawings did not show every feature of the invention specified in the claims. By the present amendment, the claims have been amended to delete features not shown in the drawings, such as an "open" motor chamber and "open" impeller housing. Therefore, the drawings are believed to be in conformance with the claims.

In the Office Action, the Examiner objected to the specification as introducing new matter into the disclosure. Specifically, the Examiner objected to the

Applicant: William S. Gatley

Serial No. 09/597,448

outlet 43 as being broader than an exhaust pipe 40, as originally set forth in the application. By the present amendment, the new matter identified by the Examiner has been amended, and the specification returned to its original condition setting forth the exhaust pipe 40.

In the Office Action, the Examiner objected to the term "vent aperture", "open motor chamber" and "open impeller chamber" as cited in the newly presented claims. By the present amendment, the terms claims "open motor chamber" and "open impeller chamber" have been cancelled from the claims. However, the term "vent aperture" remains in the application since it is properly disclosed on page 6, line 23 of the application as filed.

In the Office Action, the Examiner objected to the disclosure as including the recitation of "80+" in the title of the provisional application. The original provisional application, Serial No. 60/140,144 is entitled "80+ Blower and Furnace Venting Method" such that no correction to the disclosure is required. The term "80+" refers to a furnace that is more than 80% efficient and is a term well known in the relevant art.

In the Office Action, claims 3-12 were rejected under 35 USC §112, first paragraph, as containing subject matter that was not described in the specification at the time the application was filed. By the present amendment, the claims have been amended to correct the problems identified by the Examiner, including the use of the term "outlet", "open" motor chamber, "open" impeller chamber, and the sealing of the motor housing to the impeller housing. Based upon the claim amendments, the applicant is believed to have overcome the rejection under §112, first paragraph.

In the Office Action, the Examiner has rejected claims 7-12 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. By the present amendment, these claims have been revised to more specifically identify the invention and to correct the specific problems identified by the Examiner.

In the Office Action, claim 7 was rejected under 35 USC §102(b) as being anticipated by the Pfister U.S. Patent No. 3,782,303.

Applicant: William S. Gatley

Serial No. 09/597,448

By the present amendment, independent claim 7 has been amended to indicate that the impeller includes a back plate and a plurality of fins, where the back plate of the impeller includes a plurality of apertures. The apertures in the impeller allow cooling air to pass through the back plate of the impeller such that the single impeller within the impeller housing draws both exhaust gases from the furnace and cooling air into the impeller housing. Thus, an auxiliary cooling fan can be eliminated from the blower assembly, since the impeller creates both the flow of cooling air and a draft to draw exhaust gases from the furnace.

The Pfister '303 patent does not teach or suggest, nor render obvious, a furnace blower assembly as covered by amended independent claim 7. Instead, the Pfister '303 patent teaches a system that includes both an impeller 80 for drawing flue gases into the tube 22 and an impeller 78 that draws air to cool the motor during its operation. The draft inducer shown in the Pfister '303 patent is precisely the type of two-impeller system that the present invention was developed to replace. The elimination of the cooling impeller through the use of the single impeller as required by claim 7 provides significant advantages and reduces the load on the drive motor.

Based upon the amendments made to claim 7, claim 7 is believed to be allowable over the Pfister '303 reference.

In the Office Action, the Examiner rejected claims 3-12 under 35 USC §103(e) as being anticipated by the Gatley et al. U.S. Patent No. 6,231,311. As discussed with the Examiner during the telephone interview on August 21, 2002, the Gatley '311 reference was filed on September 17, 1999. The present invention was filed on June 20, 2000 but claims priority to a provisional application Serial No. 60/140,144 filed on June 21, 1999. Therefore, the Gatley '311 reference was filed after the priority date of the present application and is an improper reference under §102(e). The applicant hereby requests the Examiner to remove the Gatley '311 reference from consideration.

Conclusion

By the present amendment, the applicant's attorney has made every effort to place the application into consideration for allowance, including the elimination of what the Examiner identified as newly added subject matter included in

Applicant: William S. Gatley

Serial No. 09/597,448


the amendment filed January 11, 2002. Based upon the above amendments to the claims and the application, as well as the drawing changes, the applicant is believed to have placed the application into consideration for allowance with claims 3-8, 10-12.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Marked-Up Version".

The Examiner is invited to contact the applicant's undersigned attorney with any questions or comments, or to otherwise facilitate prosecution of the application.

Respectfully submitted,

ANDRUS, SCEALES, STARKE & SAWALL, LLP

By 
Joseph D. Kuborn - Reg. No. 40,689

Andrus, Sceales, Starke & Sawall, LLP
100 East Wisconsin Avenue, Suite 1100
Milwaukee, WI 53202
(414) 271-7590
Attorney Docket No.: 99917 (4497-4)

MARKED-UP VERSION**Serial No. 09/597,448****IN THE SPECIFICATION**

On page 6, lines 1 through 18, please amend the paragraphs as follows:

FIG. 3 is a perspective view of a motor housing 10 ~~and impeller housing~~
as shown in FIG. 1.

~~FIG. 4 is a perspective view of the impeller housing and impeller as
shown in FIG. 1.~~

Detailed Description of the Invention

Referring to FIGS. ~~1-4~~ 1-3, a method for cooling a motor in a blower housing assembly for furnaces according to one embodiment of the invention is shown. A motor cover or housing 10 is configured to encompass a motor 12 which comprises a shaft 14, rotor 16 and stator 18. Motor cover 10 has portions that define a shaft bushing 20 and mechanical fastener bores 22 for securing motor 12 to motor cover 10. Motor cover 10 has flanges 24 each of which has portions defining a fastener bore 26 for securing motor cover 10 to an impeller housing 28 which is configured to encompass an impeller 30 which is attached to shaft 14. Impeller 30 is situated in impeller housing 28 such that impeller 30 can freely rotate within said impeller housing 28.

On page 6, line 27 through page 7, line 18, please amend the paragraphs as follows:

The method of venting the air in furnaces according to the foregoing description results in a blower design that eliminates the need for an auxiliary fan (not shown) attached to shaft 14. In this method there is at least one hole or aperture 32 situated anywhere in a motor case or housing 10 that allows for air to enter the housing 10 to cool the bearings (not shown) of the motor 12 and the motor 12 itself in the motor case 10. The warm air flows across and around the motor 2 in the direction of the impeller housing 28 and through an inlet port 41 in the impeller housing 28. The air then flows through at least one any size hole or aperture 36 located on the back plate 42 of the impeller 30 from the motor case 10 by rotation of the impeller 30.

Applicant: William S. Gatley

Application No. 09/5979,448

The exhaust air from the impeller 30 is directed out of the outlet pipe 40 connected to 43 of the impeller housing 28.

On page 8, lines 1-13, please amend the paragraph as follows:

It is further possible to eliminate much of the heat that is generated in the vestibule of a furnace. Temperatures which typically reach 150°F can be reduced to 90°F by using the novel venting method. The blower can be sealed off to the furnace for fresh air intake. Optionally, the blower can be sealed off to the furnace door to allow for the total sealing of the inducer compartment to maximize blower efficiency. Such a configuration maximizes the drawing of motor heat into the impeller chamber and out the outlet pipe 4043 which is in fluid communication with the impeller housing 28. Also maximized is the elimination of the heat source near the furnace electronics which are at least partially contained in the furnace vestibule.

IN THE CLAIMS:

3. (Amended)A method of cooling a motor of a blower assembly used to expel exhaust gases from a furnace, the blower assembly having a motor housing for enclosing the motor and an impeller housing fixed to the motor housing ~~and having an impeller chamber~~ that receives an impeller mounted to a motor shaft of the motor, the method comprising the steps of:

forming at least one vent aperture in the motor housing such that cooling air can enter ~~an open motor chamber formed by the motor housing through the vent aperture, the motor chamber being configured to receive the motor;~~

forming an inlet port between the ~~open motor housing chamber~~ and the impeller ~~housing chamber~~ such that cooling air can enter the impeller ~~housing chamber from the motor housing chamber through the inlet port; and~~

forming at least one aperture in a back plate of the impeller such that cooling air can pass through the back plate of the impeller; and

rotating the impeller to both draw cooling air into the impeller ~~housing chamber~~ through the vent aperture in the motor housing to cool the motor and to draw exhaust gases into the impeller housing from the furnace, wherein the

Applicant: William S. Gatley

Application No. 09/5979,448

rotating impeller expels the cooling air and the exhaust gas from ~~an outlet formed in the impeller housing.~~

5. (Amended) The method of claim 3 wherein the motor housing is ~~secured~~sealed to the impeller housing.

6. (Amended) The method of claim 3 wherein the motor shaft passes through the inlet ~~opening~~port between the motor chamber and the impeller chamber.

7. (Amended) A furnace blower assembly for expelling exhaust gases from a furnace, the blower assembly comprising:

a motor having a motor shaft;

a motor housing ~~having an open motor chamber~~ configured to receive and enclose the motor, the motor housing including at least one vent aperture for allowing external cooling air to enter the ~~motor chamber of the motor housing;~~

an impeller housing mounted to the motor housing ~~and having an open impeller chamber,~~ the impeller housing including an inlet port for providing fluid communication between the impeller ~~housing chamber~~ and the motor ~~housing chamber;~~ and

an impeller enclosed within the impeller housing and mounted to the motor shaft for rotation with the motor shaft, the impeller having a back plate and a plurality of fins, wherein the back plate includes a plurality of apertures, wherein rotation of the impeller draws cooling air into the impeller ~~housing chamber~~ from the motor ~~housing chamber~~ for cooling the motor and draws the exhaust gases from the furnace into the impeller chamber.

8. (Amended) The furnace blower assembly of claim 7 wherein the motor housing is ~~connected~~sealed to the impeller housing such that cooling air

Applicant: William S. Gatley

Application No. 09/5979,448

can enter the motor housing through only the vent aperture formed in the motor housing.

10. (Amended)The furnace blower assembly of claim 7 wherein the motor shaft extends through the inlet port.

11. (Amended)The furnace blower assembly of claim 7 wherein the apertures formed in the back plate of the impeller allow the cooling air to pass through the back plate.

12. (Amended)The furnace blower assembly of claim 7 wherein the impeller housing includes an outlet pipe ~~in communication with the impeller chamber~~ such that rotation of the impeller expels the exhaust gases and the cooling air from the impeller housing through the outlet pipe.